SCHEDULED ELECTRONIC MAIL DELETIONS

FIELD OF THE INVENTION

[0001]   The invention relates generally to electronic mail systems. More particularly, the

invention relates to a system and method of scheduling automatic deletions of electronic mail

messages in a user's electronic mail account.

BACKGROUND

[0002]   Electronic mail, or email, is a widespread, heavily used software tool for exchanging

messages among users over a communications network, such as the Internet. Anyone with an

email-enabled computing device, such as a desktop or laptop computer, workstation, personal

digital assistant, or cell phone, with a wireless or wired connection to the network, can send

email messages to the electronic mailboxes of others users similarly connected to the network. A

typical business user can receive several hundred email messages in the course of a day.

Moreover, users often save a copy of each self-generated mail message, whether that mail

message is a newly composed mail message or a reply to or a forwarding of a received message.

Unless proactively and regularly managed, users' mailboxes thus become cluttered with saved

email messages,   many of which have outlived their usefulness.

[0003]   Disadvantages inherent to mailbox clutter are evident. Organizations need to spend

more on their mail servers to maintain the large number of saved email messages and employees

are less efficient when having to sort through many irrelevant emails. Notwithstanding such

disadvantages, mailbox clutter still grows because users do not want to delete immediately email

messages that may have some time-limited usefulness (e.g., until a scheduled meeting occurs

with the email message sender). Many users, however, forget to delete these email messages

after their period of usefulness has passed. Thus, there is a need for a system and method that can help email users reduce the clutter of email messages in their mailboxes and organizations manage costs for maintaining email accounts.

SUMMARY

[0004]   In one aspect, the invention features a method of managing electronic mail (email) messages in an email account. A first email message is displayed to a user on a display screen of a device. The user is presented with a plurality of deletion options in response to detecting an intent of the user to perform an action on the first email message. An input signal is received from the user that selects one of deletion options. In response to the input signal, the action is performed on the first email message and a deletion criterion is set for a second email message based on the selected deletion option.

[0005]   In another aspect, the invention features a computing system for managing electronic mail (email) messages in an email account. The computing system comprises a display screen and an input device receiving a first signal from a user of the computer system indicating intent of the user to perform an action on a first email message displayed on the display screen. A processor executes an email client program to display a plurality of deletion options on the display screen in response to the first signal. The email client program performs the action on the first email message and sets a deletion criterion for a second email message in response to a second signal received by the input device that selects one of the deletion options.

[0006]   In yet another aspect, the invention features an apparatus for managing electronic mail (email) messages in an email account. The apparatus includes means for displaying to a user a first email message on a display screen of a device, means for presenting the user with a

plurality of deletion options in response to detecting an intent of the user to perform an action on

the first email message, means for receiving an input signal from the user that selects one of

deletion options, and means, responsive to the input signal, for performing the action on the first

email message and for setting a deletion criterion for a second email message based on the

selected deletion option.

[0007] In still another aspect, the invention features a computer program product for use with

a computer system. The computer program product comprises a computer useable medium

having embodied therein program code. The program code includes program code for displaying

to a user a first email message on a display screen of a device, program code for presenting the

user with a plurality of deletion options in response to detecting an intent of the user to perform

an action on the first email message, program code for receiving an input signal from the user

that selects one of deletion options, and program code, responsive to the input signal, for

performing the action on the first email message and for setting a deletion criterion for a second

email message based on the selected deletion option.

[0008] In still yet another aspect, the invention features a computer data signal embodied in a

carrier wave for use with a computer system having a display and capable of generating a user

interface through which a user may interact with the computer system. The computer data signal

comprises program code for displaying to a user a first email message on a display screen of a

device, program code for presenting the user with a plurality of deletion options in response to

detecting an intent of the user to perform an action on the first email message, program code for

receiving an input signal from the user that selects one of deletion options, and program code,

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responsive to the input signal, for performing the action on the first email message and for setting a deletion criterion for a second email message based on the selected deletion option.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]   The above and further advantages of this invention may be better understood by referring to the following description in conjunction with the accompanying drawings, in which like numerals indicate like structural elements and features in various figures. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

[00010]   FIG. 1 is a block diagram of an embodiment of a client system constructed in accordance with the invention.

[00011]   FIG. 2 is a flow diagram of an embodiment of a process for scheduling automatic deletion of a received email message.

[00012]   FIG. 3 is an illustration of a one-click deletion menu for assigning a deletion criterion to a received email message.

[00013]   FIG. 4 is a flow diagram of an embodiment of a process for scheduling automatic deletion of an email message to be sent.

[00014]   FIG. 5 is an illustration of a one-click deletion menu for assigning a deletion criterion to an email message to be sent.

[00015]   FIG. 6 is an illustration of a one-click deletion menu for linking a deletion criterion for an email message to a scheduled item, such as a task in a "to do" list or a meeting in a "calendar."

[00016]   FIG. 7 is a flow diagram of an embodiment of a process for linking deletion of an email to a scheduled item.

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[00017]   FIG. 8 is a diagram of an example of mailbox view having email messages marked

for scheduled deletion in accordance with the invention.

DETAILED DESCRIPTION

[00018]   In general, the present invention provides users with a tool for managing electronic

mail (email) messages in their email accounts. In brief overview, a user determines if and when

email messages are to be deleted from an email account. Scheduled email deletions can be time-

based or event-based. Time-based deletions cause email messages to be deleted at a specified

time. Event-based deletions cause email messages to be deleted on the occurrence of a particular

event. A user assigns a deletion criterion to an email message, whether time-based or event

based, upon closing that email message. Accordingly, email messages are subsequently and

automatically removed from a user's email account, at the scheduled time or upon the occurrence

of the event, without any further intervention by the user, thus helping reduce the clutter of email

messages in the user's email account and the amount of computing resources needed for storing

email messages.

[00019]   FIG. 1 shows an embodiment of a client system 10 constructed in accordance with the

invention. The client system 10 can be any personal computer (e.g., 286, 386, 486, Pentium,

Pentium II, Macintosh computer), Windows-based terminal, Network Computer, wireless device,

information appliance, RISC Power PC, X-device, workstation, mini-computer, mainframe

computer, cell phone, personal digital assistant (PDA) or other computing device that has

hardware 14 such as a display screen, one or more input devices (e.g., keypad, stylus, keyboard,

mouse, touch-pad, and trackball), a processor for executing application programs 16, and

sufficient persistent storage for storing such application programs and related information. One such application program 16 is an electronic mail client program 18 of the invention.

[00020]   The email client program 18 can be any proprietary or commercially available email program, such as Lotus NOTES™ and Microsoft OUTLOOK™, modified to support scheduled email deletions of the invention. Optionally, the client system 10 includes other application programs 16, such as a "personal information manager" 22 with which the email client program 18 interoperates to schedule event-based email deletions in accordance with the invention. The personal information manager program 22 includes a task organizer (i.e., "To Do" items) module 24 and a calendar module 26 by which a user can define and schedule tasks and appointments. Although shown to be separate application programs, the email client program 18 and personal information manager 22 can be integrated in a single application program.

[00021]   The email client program 18 and performance information manager 22 execute within an operating system 28. Examples of operating systems supported by the client system 10 include Windows 3.x, Windows 95, Windows 98, Windows NT 3.51, Windows NT 4.0, Windows XP, Windows CE, Macintosh, Java, LINUX, and UNIX. The client system 10 also includes a network interface 30 for communicating over a network 32. The network 32 can be a local-area network (LAN), a metro-area network (MAN), or wide-area network (WAN), such as the Internet or World Wide Web. Users of the client system 10 can connect to the network 32 through one of a variety of connections, such as standard telephone lines, LAN or WAN links (e.g., T1, T3), broadband connections (Frame Relay, ATM), and wireless connections (e.g., 802.11(a), 802.11(b), 802.11(g)). The email client program 18 communicates with an email

server 40 located on the network 32 through the network interface 30, to exchange email

messages with other users connected to the network 32.

[00022]   FIG. 2 shows an embodiment of a process 50 for scheduling time-based deletions of

email messages in an email account in accordance with the invention. Consider that the user is

currently running the email client program 18 on the client system 10, has received a new email

message, and opened it to read its contents. The email client program 18 accordingly displays

the new email message on a display screen of the client system 10 within a graphical window.

At step 54, the user signals intent to close the email message by activating a "close" button

located at the window's edge. In response to this signal to close the email message, the email

client program 18 displays (step 58) a deletion-options menu on the display screen. The

deletion-options menu lists various deletion criteria from which the user is required to make a

selection to complete the process of closing the email message.

[00023]   The user then selects (step 62) a particular deletion criterion to assign to the email

message. The manner of making the selection depends upon the technology of the client system

10. For example, the user can click the desired selection (e.g., for a mouse, trackball, or touch-

pad input device), type a character associated with the selection (e.g., for a keypad or keyboard),

or press the selection on the display screen (e.g., with a stylus). Execution of the user's selection

results in closing (step 66) the email message, and scheduling or performing immediately (step

70) the deletion of the email mail message in accordance with the user's selection. Optionally, in

the inbox of the user's mailbox view, when the email message is not deleted immediately, an

indicator also appears (step 74) adjacent to the email message to indicate the scheduled deletion.

One technique useful for implementing single selection deletion-option menus of the invention is

described in United States Patent Application No. 09/992,236, filed November 6, 2001, titled

"Method and Apparatus for Single Selection Evaluations in Interactive Systems," the entirety of

which is incorporated by reference herein.

[00024]   FIG. 3 shows an example of a deletion-options menu 100 presented to the user for

closing a received email message. The deletion-options menu 100 includes a plurality of

deletion-criterion buttons 104. Each button 104, except for button 104a, identifies a different

expiration period for the email message (e.g., immediate deletion, delete in 1 hour, 1 day, 1

week, and 1 year). The deletion-criterion button 104a indicates to save the email message

indefinitely. With the exception of this button 104a, each of the other deletion-criterion buttons

establishes a time-based scheduled deletion of the email message. In one embodiment, those

deletion-options available to the user are determined by an email retention policy set by the

organization for which the user works. For example, the policy can require mandatory expiration

periods not to exceed one year. In this instance, the "Save indefinitely" button 104a is not

presented as an option. In another embodiment, the user designs the deletion-option menu 100 to

satisfy personal email retention practices. Deletion options other than the time-based deletion

options shown in FIG. 3 can be used without departing from the principles of the invention. For

example, another set of deletion options includes: delete immediately, at the end of the day, at

the end of the week, at the end of the month, at the end of the year, or keep indefinitely.

[00025]   Although described above in connection with closing email messages, the principles

of the invention apply also to setting a deletion criterion for a self-copy of a "sent" email

message. Users commonly configure their email client programs to save a copy in their email

account of those email messages that are newly authored, sent in reply, or forwarded. For

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example, consider that before closing the email message described in FIG. 3, the user desires to

draft a reply to the sender of the email message. Referring to FIG. 4, an embodiment of a

process 110 for managing a copy of a sent email message includes displaying (step 118) a

deletion-options menu on the display screen when the user signals intent to send the email

message. The user can signal this intent by activating a "send" button displayed by the email

client program 18. This deletion-options menu lists various deletion criteria from which the user

is required to make a selection to complete the process of sending the email message. The user

selects (step 122) the particular deletion criterion for the email message using a selection

technique appropriate for the technology of the client system 10, as described above. This

selection causes the email message to be sent (step 126) and the copy of this email message,

which remains in the user's email account, to be immediately deleted or scheduled for deletion

(step 130). Optionally, in the sent mail folder of the user's email account, when the copy of the

sent email message is not deleted immediately, an indicator appears (step 134) adjacent to the

email message to indicate the scheduled deletion.

[00026] FIG. 5 shows an embodiment of a deletion-options menu 150 presented to the user for

setting a deletion criterion for the self-copy of a sent email message (i.e., a newly authored,

reply, or forwarded email message). The deletion-options menu 150 includes a plurality of

deletion-criterion buttons 154 that each identify a period for saving a copy of the sent email

message in the sender's email account (e.g., do not save, save for 1 hour, 1 day, 1 week, 1 year,

and indefinitely). Activating any of the buttons 154 operates to send the email message to its

identified recipients. Activation of the selected button 154 also schedules a time-based deletion

or performs an immediate deletion of the copy, except for the button 154a, which indicates to

save the copy indefinitely.

[00027]   Another embodiment of the invention permits the user to associate or link the deletion

of an email message to an external object, such as a scheduled item and a file stored on the client

system 10. A scheduled item, as used herein, is a scheduled event, such as a task or an

appointment. For linking to a scheduled item, the user runs the personal information manager

program 22 of FIG. 1 to define and maintain such tasks and appointments. FIG. 6 shows an

embodiment of another deletion-options menu 180 that can be presented to the user for linking

the deletion of email messages with scheduled items or with stored files. In addition to the same

buttons of FIG. 3, here identified as deletion-criterion buttons 184, the deletion-options menu

180 includes a button 184b (labeled "Save Until") for linking the deletion of the email message

(or its copy) to a scheduled item.   In another embodiment, the user can highlight an email

message in a mailbox view and open a drop-down menu on the toolbar that includes an option to

link the highlighted email message to an external object.

[00028]   FIG. 7 shows an embodiment of a process 200 for linking the deletion of an email

message to a scheduled item. When closing a received email message, when forwarding a

received email message, or when sending a new or reply email message, the user signals (step

204) intent to close or send the email message. In response, the email client program 18 displays

(step 208) the deletion-options menu 180 of FIG. 6, for example. To link deletion of the email

message to a scheduled item, the user selects (step 212) the linking button 184b. Activation of

this button 184b causes a dialog window to open (step 216), prompting the user to identify the

particular scheduled item to which the email message (or its copy) is to be linked. To assist the

user in selecting the scheduled item, the dialog window provides searching and browsing

capabilities for looking through the possible tasks or appointments. Once the user enters the

selected scheduled item, at step 220 the email message closes (for a close operation) or is sent

(for a send operation) to its target recipient. Any number of email messages can be linked to the same scheduled item. When the event associated with the scheduled item occurs, e.g., the task is marked completed or the date of the appointment passes, each email message linked to that scheduled item is automatically deleted (step 224).

[00029] As a safeguard against unwanted email message deletions, one embodiment of the email client program 18 prompts the user for a confirmation before deleting any automatic time-based or event-based deletions. For example, the email client program 18 can display a dialog window listing each of the email messages that are to be deleted immediately, pending user confirmation. In one embodiment, a checkbox appears adjacent to each deletion candidate. The dialog window also instructs the user to enter a check into the checkbox of each email message that is to be deleted, or, alternatively, that is to be saved from deletion, depending upon the preferred technique for confirming deletion.

[00030] FIG. 8 shows an example of a mailbox view 300 listing a plurality of email messages. (For example, the mailbox view 300 can be of the sent mail folder or of the inbox folder). Some of the email messages (denoted 304) are associated with scheduled time-based deletions, other email messages (denoted 308) are associated with event-based deletions, and other email messages (denoted 312) are unassociated with any scheduled deletions (i.e., to remain in the email account indefinitely until manually deleted by the user). One type of icon 316, here, a timepiece or a clock located adjacent to the subject column of the email message, identifies the email message as being associated with a scheduled time-based deletion. Variations of the icon 316', 316'' (e.g., different colors, different shading or different patterns) can indicate the amount of time remaining before the email message is deleted. For example, a red clock can signify that

the email message is to expire immediately (i.e., to be deleted upon the next refresh of the email

client program 18); an orange clock can signify that the email message is to expire in less than an

hour; and a green clock can signify that the email message is scheduled to expire in less than one

month. The user can activate the icon (e.g., by double-clicking) to open a dialog window that

specifies the scheduled time of deletion and permits the user to modify or remove the expiration

date.

[00031]   Another type of icon 320, here, a double-headed arrow located adjacent to the subject

column of the email message, indicates that the email message is associated with an event-based

deletion. Optionally, a second icon, such as a clock, appears adjacent the double-headed arrow

to indicate when the scheduled event is currently expected to occur. Again, patterns or color can

be used to denote the expiration period, for example, a yellow clock to signify that the scheduled

event is to occur within a week. Activating this icon opens a dialog window that specifies the

scheduled item. The user can open and review the scheduled item, remove the link to this

scheduled item, change the link to a different scheduled object, or any combination thereof.

Note that if a scheduled item experiences a schedule change, the expiration date of the email

message linked to that scheduled item automatically changes. For example, consider an

appointment that is changed to occur one week later than originally scheduled. The expiration

date of any email message linked to the occurrence of this appointment is automatically extended

one week.

[00032]   Additionally, for a user with visual disabilities, all iconic indicia described above

have optional text equivalents (suitable for presentation via text-to-speech technology), which

can be used instead of the icons, depending upon the user's settings in a preferences table.

[00033]   The present invention may be implemented as one or more computer-readable

software programs embodied on or in one or more articles of manufacture. The article of

manufacture can be, for example, any one or combination of a floppy disk, a hard disk, hard-disk

drive, a CD-ROM, a DVD-ROM, a flash memory card, an EEPROM, an EPROM, a PROM, a

RAM, a ROM, or a magnetic tape. In general, any standard or proprietary, programming or

interpretive language can be used to produce the computer-readable software programs.

Examples of such languages include C, C++, Pascal, JAVA, BASIC, Visual Basic, and Visual

C++. The software programs may be stored on or in one or more articles of manufacture as

source code, object code, interpretive code, or executable code.

[00034]   While the invention has been shown and described with reference to specific

preferred embodiments, it should be understood by those skilled in the art that various changes in

form and detail may be made therein without departing from the spirit and scope of the invention

as defined by the following claims.

What is claimed is: